

MATH DEPARTMENT

2017-2018 Newsletter

Sacred Heart University

WELCOME to our annual Mathematics Department Newsletter. We have had a very exciting year on many fronts. The department hosted the annual fall meeting of the Northeastern Section of the Mathematical Association of America. Approximately 150 faculty and students from all over New England attended this conference. Many of our students participated in this conference: giving presentations, competing in the problem solving competition, and assisting with registration.

We are pleased to announce that Dr. Bernadette Boyle was awarded tenure and promotion to associate professor. This is very well-deserved. Congratulations, Bernadette! Dr. Boyle also had quite a year on other fronts which you can read about in the Faculty Spotlight section of this newsletter.

The department is also pleased to announce that after a successful search which included preliminary interviews at the Joint Meetings in San Diego and four highly qualified candidates coming to campus for interviews, we have hired a new tenure-track faculty member. Dr. Elliott Bertrand will be joining us this coming Fall. Dr. Bertrand recently completed his Ph.D. at the University of Rhode Is-

land. His area of specialization is difference equations. His expertise in applied mathematics will complement the university's new initiative in the 3+2 engineering program. Welcome, Elliot!

On a sadder note, we say good-bye to our colleague, Rosemary Danaher. Prof. Danaher will be beginning a Ph.D. program in statistics at the University of New Hampshire in the Fall. We will miss Prof. Danaher and all she has done for the department, and wish her well in this new chapter in her career. To fill her position, we are happy that Tina Romansky, one of our long-time adjuncts, will teach full-time for one year while we do a search to fill Prof. Danaher's position. Welcome, Tina!

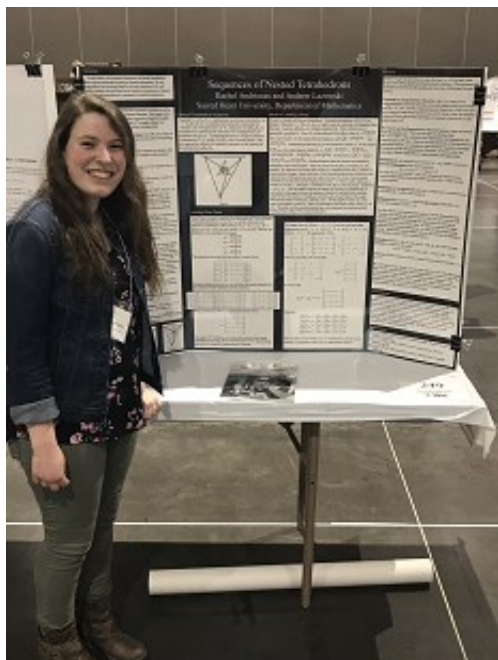
The department is excited about many of its accomplishments this past year. Our students have participated in and presented at conferences, our graduates have exciting plans for the future, and our faculty have had some notable accomplishments. We have also been fortunate to keep in touch with several alumni who have written to us letting us know how they are doing. We have noted their accomplishments as well. We hope you enjoy reading about all of this in our annual newsletter!



Student Accomplishments

We had several student accomplishments during the past academic year. First, under the advisement of Dr. Loth, two teams of students participated in COMAP (The Consortium for Mathematics and its Applications) Mathematical Contest in Modeling, a worldwide mathematical contest. One of the teams (Rachel Andriunas '18, Jaime Maggio '21, and Matthew Romaniello '19) received the final designation "Successful Participant" for their solution to *Problem B: How Many Languages?*.

Students in the department were also active in presenting their work during the academic year. At the Northeastern Section of the Mathematical Association of America (NES/MAA) held right here at Sacred Heart University, three students presented research that they had been conducting. Nancirose Piazza '18 presented "The Diophantine Equation"; Chris Domville '18 presented "The Digital Root Function", and Rachel Andriunas '18 presented "Sequences of Nested Tetrahedrons".

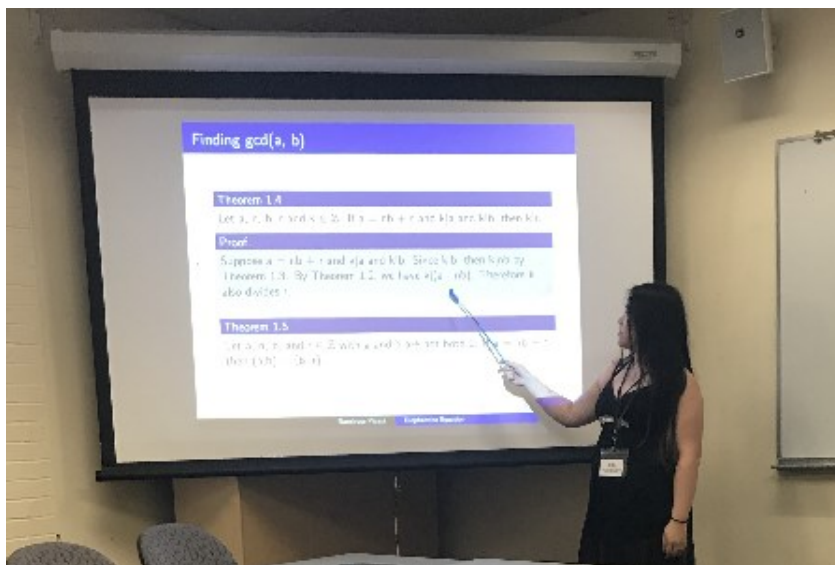


Rachel also presented her work at a student poster session at the Joint Mathematics Meetings (JMM) in San Diego. The JMM is a national mathematics meeting held every year sponsored jointly by the Mathematical Association of America and the American Mathematical Society. Nice job, Rachel!

Rachel and Nancirose presented their work at the Spuyten Duyvil Undergraduate Mathematics Conference held at Southern Connecticut State University. They, along with Nicole Esposito '18, participated in the Integration Bee held at that conference.

Finally, several of our students, forming two teams, participated in the Collegiate Problem Solving at the NES/MAA conference. Rachel Andriunas '18, Chris Domville '18, and Ashley Fitzgerald '18 formed one team; Sarah Riccio '19, Akeylah Khandwala '18, and Nicole Esposito '18 formed another team.

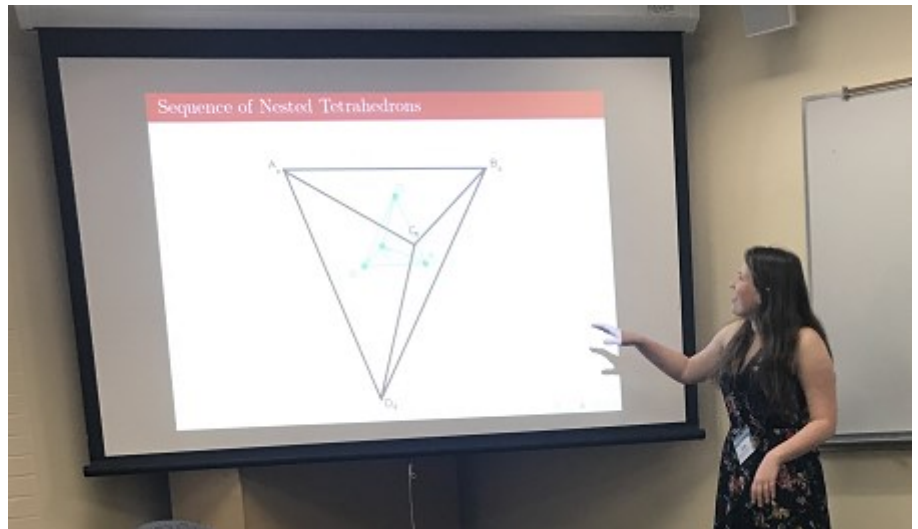
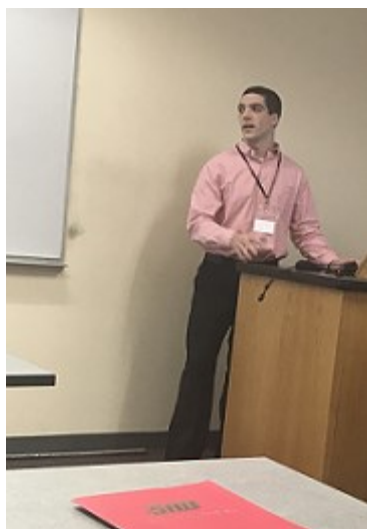
Congratulations to our students on such active participation in conferences, both local and national, this year!



Meeting of the Northeastern Section of the Mathematical Association of America

The Mathematical Association of America is divided into 29 geographical sections. SHU is located in the Northeastern Section which includes colleges and universities from New England (and a little bit of maritime Canada). The Northeastern Section of the Mathematical Association of America (NES/MAA) hosts two conferences per year, one in November (Fall) and one in late May/early June (Spring). These conferences are hosted by various colleges and university. In November, SHU was privileged to host the Fall meeting of the

NES/MAA. About 150 faculty and students from all over New England participated in this conference. At this conference, there were many faculty and student presentations, a student problem solving competition, and a student mathematical scavenger hunt. This was a prestigious event that the math department was proud to host. Below are some photos of our students giving talks and enjoying the Collegiate Problem Solving Competition. More details of this conference can be found by clicking [here](#).



Pi Mu Epsilon Inductions and Awards Night

On April 18th we held our annual Pi Mu Epsilon Induction Ceremony and Awards Night. Dr. Braxton Carrigan from Southern Connecticut State University was invited as a special guest and presented "The Travelling Baseball Fan."

Inductees of Pi Mu Epsilon were Michael Bubolo, Cariann Johnson, and Cassandra Lew. Current members of Pi Mu Epsilon who assisted in the induction were Rachel Andriunas, Michael Boyles, Nicole Esposito, Akeylah Khandwala, and Sarah Riccio. Additional current members of Pi Mu Epsilon are David

Bocach, Christopher Domville, and Arianna Leo.

Winners of the Freshmen Award were Lucinda Cahill and Nicholas Fierro; winners of the Sophomore Award were Lauren Bolcar and Zachary Tsekos. Sarah Riccio won the Junior Math Award; Michael Bubolo won the Rose Marie Kinik award for top junior math major. The Silver Medal of Excellence was awarded to Nancirose Piazza, and the Gold Medal of Excellence was awarded to Rachel Andriunas. Congratulations to everyone who was recognized!



Graduating Seniors

As we say goodbye to our graduating seniors, we are excited for what the future holds for them. Rachel Andriunas will be beginning a Ph.D. program in mathematics at Kansas State University. Nancirose Piazza will also be pursuing a Ph.D. in mathematics. She will be doing so at the University of New Hampshire. Chris Domville will be pursuing a Ph.D. in chemistry at New York University. Mike Boyles will be pursuing a Master's Degree in Biostatistics at the University of Connecticut. Michael Calvagna and Meredith

Petralia will be staying at SHU to get their Master's Degree in Teaching. Michael will be pursuing secondary teaching and Meredith will be interning at Madison Middle School in Trumbull. Akeylah Khandwala will be an SAR Analyst in the financial intelligence unit at People's United Bank. Nicole Esposito will be employed at FactSet Research Systems. We wish our graduating seniors all the best as they embark on their futures.

Math Club and Special Events

The Math Club had a busy year under the leadership of President Rachel Andriunas '18. They hosted a Coffee and Cram night in each of the Fall and Spring semesters. where they offered free math tutoring before finals. They also organized a Math Olympics for the 3rd and 4th grade students from Our Lady of the Assumption Catholic School in Fairfield. These guest students played a variety of math games and had fun while learning and having the chance to visit Sacred Heart University's campus.



At the university level, Dr. Moliterno invited Dr. Tommy Ratliff from Wheaton College to present the annual mathematics talk to the general university community. Dr. Ratliff's talk, "The Voting Rights Act, Partisan Gerrymandering, and Mathematics" was well received as a standing-room only crowd of over 400 students and faculty (including faculty outside the math department) packed the University Commons! In his talk, Dr. Ratliff discussed the mathematics behind the gerrymandering of congressional districts for partisan reasons. His talk was captivating and showed how mathematics is relevant to the common citizen.

After taking a year off, the department resumed hosting its annual Alumni Night. Several current students attended to hear how SHU math major alums have been applying their degree in mathematics to their careers and to their daily lives. We were happy to welcome back Bobby Lycoudes '12, Katie Perzanowski '13, Ania Kadloff '13, Nicole Trommelen '15, Sarah Novotny Vigliotta '08, Tim Weiss '15, Victoria Jukic '15, Matt Cole '15, and Alexandra Kowalsick '12. Great to have you back!



Alumni Page

One of the greatest joys of the math department is keeping in touch with our alumni. It's always exciting to hear about their accomplishments, both professional and personal. Here are some highlights:

Connor Bohl '15 is working for reinsurance brokerage firm Guy Carpenter as an Actuarial Analyst and studying for exam 4/C. He is happy to answer any questions about the career or exams from aspiring SHU actuaries. Connor is currently living in Manhattan and hopes to move to Colorado.

Christopher Carbone '11 just finished another semester teaching college algebra and statistics at Post University. Recently, he designed Linear Algebra and Discrete Mathematics courses, to be taught online and on campus for Post University, as well. Additionally, he continues to work as a tutor at Mathnasium. Finally, Chris had the joy of accompanying his sister, Lisa Carbone, as she walked at graduation for her B.A. degree in Media Arts.

Matt Cole '15 started working at Freddie Mac as a Data Scientist and finished up his M.S. in Biostatistics at Johns Hopkins.

Michael Delviscovo '08 and his wife had their first child on May 16th. They have a little girl, Marie Arya. Although they didn't know each other at the time, his wife, Janelle, is also in the class of 2008. Her degree was Business Administration.

Lauren DiStefano Dominick '09 recently stepped down as math department chair at Newtown High school after the birth of her daughter. She plans to adjunct at a local community college.

Kyle Evans '11 completed his Ph.D. in Mathematics with a research area of Mathematics Education with dissertation "Investigating the Relationship Between Mathematics Education and Global Citizenship Education Through K-12 Mathematics Teacher Perspectives". In addition, he recently accepted a two-year position at Trinity College as a Visiting Assistant Professor. Finally, he won the Louis J. DeLuca Memorial Award for excellence in teaching at UConn.

Nick Kapoor BS '11 MBA '14 continues to work at I-Engineering in Shelton, CT now as the VP of Operations. He will complete a Master's in Mathematics at Fairfield U this summer. Nick continues to adjunct in various departments at Fairfield U and Sacred Heart. Nick also serves as an appointed member of the Connecticut Commission on Human Rights and Opportunities as a Commissioner overseeing the state agency in charge of eliminating discrimination and prejudice throughout the State of Connecticut. He continues to be involved in Democratic politics and looks forward to a very busy election year summer.

Nichole Mangione '14 says so far 2018 has been the best year yet living in New Zealand. She has begun a new position with the New Zealand Transport Agency as a Senior Business Analyst working more with SQL, R, and SAS to help identify various roading and financial trends/forecasts. She is also about to start a project to develop an AI platform for Customer Request Management (CRMs). It's been an exciting year bringing mathematics (statistics), programming, and project management all together. Nichole also got engaged in February and is planning a wedding in Connecticut in 2020/21!

Suzanne May '13 started a new position last year as the Data Analytics Manager at a company called Purchased. She is doing some pretty cool work consulting for Google!

Sarah Novotny Vigliotta '08 just finished a year of coordinating the multisection integral calculus course at Yale. Also, at Yale, Sarah led a teaching-prep seminar for future graduate student instructors. She is finishing her time being an MAA Project NExT Fellow in the Blue '17 cohort. Lastly, Sarah and her husband are expecting their fourth child in September!

Annie Rouquie Morissette '12 got married on January 13. She has been teaching at Smith Middle School in Glastonbury, CT and will be moving to Glastonbury High School in the fall.

Faculty Spotlight

The faculty have accomplished a lot this year. Dr. Jason Moliterno chaired the local arrangements committee for the meeting of the Northeastern Section of the Mathematical Association of America (NES/MAA) which was held on campus in November. He is also completing his terms as governor/section representative of the NES/MAA. In addition to his activity in the MAA, Dr. Moliterno had two publications. His paper *Entries of the group inverse of Laplacian matrix for generalized Johnson graphs* was published in the journal *Linear and Multilinear Algebra*, Volume 66, Issue 6, pages 1153-1170, (2018). His paper *A tight upper bound on the spectral radius of bottleneck matrices for graphs* will be published in *Linear Algebra and its Applications*, Volume 551, Issue 15, pages 1-17, (August 2018). Finally, he presented "Do Students Really Understand What They Are Doing?" presented at MathFest in Chicago, IL in July 2017 and "Entries of the group inverse of the Laplacian matrix for generalized Johnson graphs" at the Joint Mathematics Meetings in San Diego, CA in January 2018.

Dr. Peter Loth had a very productive year. He was the advisor for two teams of students participating in the COMAP competition. More details on his successes there can be found in the Student Accomplishments Section of this newsletter. In addition to his accomplishments with COMAP, his research paper *The classification of infinite abelian groups with partial decomposition bases in $L_{\infty\omega}$* (with C. Jacoby) was published in the refereed periodical *Rocky Mountain Journal of Mathematics* 47 (2017), 463-477. At the Joint Mathematics Meetings of the American Mathematical Society (AMS) and the Mathematical Association of America (MAA) in San Diego, CA, January 10-13, 2018, he presented the research paper *Invariants of the duals of Warfield groups*.

Dr. Andrew Lazowski enjoyed his first year as director of the Thomas More Honors Program. This position has given him the chance to learn more about Sacred Heart in terms of admissions, curriculum, and living learning communities. He also attended the National Collegiate Honors Council Conference in Atlanta, GA this past November. Dr. Lazowski was invited to speak at the

Section NExT program at the MAA sectional meeting this fall. He was also invited to speak at Fairfield University as their guest lecturer; his talk was titled "The number of sides of regions in hyperbolic space". He took the NOYCE scholars to the ATOMIC conference so that they can learn from current high school teachers. He also attend the JMM meetings to help with the hiring process and to give the talk "Exploring exceptional points for Fuchsian groups". In the spring semester Dr. Lazowski was on sabbatical where he conducted research. During that time his paper "The effects on monotonicity when combining alternative vote with plurality" was published in the *IMA Journal of Applied Mathematics*. He has sent other papers out for review and we are hopeful for publication.

Dr. Hema Gopalakrishnan was invited to present at the Undergraduate Mathematics Seminar at Bard College last fall. She organized a two day intensive problem-solving workshop of the Fairfield County Math Teachers' Circle (FCMTC) for an enthusiastic group of middle school math teachers last summer. The summer workshop was followed by several academic year meetings. She is grateful to Dean Robin Cautin and Chairperson Jason Moliterno for their support of the FCMTC.

Prof. Rosemary Danaher had a very productive year. Last year she created a case study for her statistics sections based on the Flint Michigan Water crisis to provide students with the opportunity to test their understanding of what good and bad statistical analysis looks like and to gain exposure to the social justice issues attached to this case. The Case Study Center at the University of Buffalo recently expressed interest in this work and has encouraged her to complete the requisite components needed for a formal review. In the Spring of 2018, Prof. Danaher collaborated with a stem cell researcher investigating how stem cells might be used to treat Retinitis Pigmentosa, a hereditary condition that leads to blindness. Prof. Danaher provided the statistical analysis utilizing the data from 39 patients who under-

went treatment. In April this paper was accepted for publication by the journal, Stem Cell Investigation, a leading stem cell publication listed on PubMed. In early January, Prof. Danaher was contacted by the nursing department to provide the statistical analysis associated with a dissertation for one of their doctoral students. The paper is entitled, *Bullying Among Nurses in the Workplace*. Her work was completed in early April and the student defended her dissertation in May. Finally, also in early January, Prof. Danaher was admitted into the Ph.D. program in Statistics at the University of New Hampshire. She will be heading there in the fall to embark on this new adventure.

This was a busy year for Dr. Bernadette Boyle. She earned tenure and promotion to Associate Professor of Mathematics! In April, Dr. Boyle ran the Boston Marathon and in doing so, raised several thousand dollars for the “Run for Excellence Scholarship Fund” for Sacred Heart University students. Despite some of the worst conditions in the history of the Boston Marathon, she was able to finish well and enjoy the experience. Dr. Boyle also was awarded the university’s campus life leadership award, the Dr. Marian Calabrese Outstanding Faculty Award. In the classroom, she has

enjoyed teaching many different levels of math and mentoring two senior seminar projects in mathematics. Dr. Boyle has also continued her research on the index of numerical semigroup rings and presented at the Joint Mathematics Meetings in San Diego last January.



Dr. Bernadette Boyle running in the Boston Marathon

Coming Attractions!

As this academic year closes, we look forward to another great year ahead. We look forward to the arrival of our newest tenure-track faculty member, Dr. Elliott Bertrand, and our temporary one year faculty-member, Tina Romansky. We also welcome back Dr. Andrew Lazowski from sabbatical.

The department is working on some curricular changes. This includes revising many of our existing courses with more up-to-date course titles which more accurately reflect the course content,

creating a projects-based statistics course, and creating new upper level elective courses such as Numerical Analysis and Topology.

We look forward to our students participating in academic activities such as giving talks and presenting posters at conferences and at SHU’s annual Academic Festival. The department also plans to hold our annual Alumni Night in October, invite a speaker to give a mathematics talk to the university community, problem solving competitions, and Math Club activities. Stay tuned!